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EXAMINER

LAM, HUNG H

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/817,008	Applicant(s) SUN ET AL.	
	Examiner HUNG H. LAM	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-39 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 27-29 and 35-37 of the present application No. 10/817,008 ('008) are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 15, 17 and 29 of U.S. Patent No. 7,317,843 ('843). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Claim 27 of the present application is encompassed by patent claim 1 and 17 ('843). Patent claims 1 and 17 ('843) also teaches a method of providing two images of the same scene wherein the images are taken successively in a short interval. Therefore, image sensor inherently remains exposed to light for capturing the first and second image.

Claim 28 of the present application is encompassed by patent claim 15.

Claim 29 of the present application is encompassed by patent claim 15.

Claim 35 of the present application is encompassed by patent claims 1, 15 or 29.

Claim 36 of the present application is encompassed by patent claims 15 and 17.

Claim 37 of the present application is encompassed by patent claims 15.

3. Claims 1, 12-15 and 19-20 of the present application '008 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 11, 15-16, 19 and/or 29 of U.S. Patent '843 in view of Tsuruoka (US-2007/0,206,246).

Claim 1 of the present application is encompassed by patent claims 1, 15 or 29 ('843). However, the patent claims 1, 15 or 29 ('843) fail to explicitly disclose a digital camera for executing a method of luminance correction and comprising: a storage device to store the captured images and a processing unit coupled to the storage device to enhance one of the first and second captured images with luminance correction.

In the same field of endeavor, Tsuruoka teaches a signal processing apparatus for processing a plurality of images obtained by a camera to the same objection under different exposure condition ([0021; 0150-0154]). Tsuruoka further teaches a gradation

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means (Figs. 1 and 15; 14) for performing gradation correction on the luminance signals obtained from a Y/C separation unit and a working buffer (11; [0021]). In light of the teaching from Tsuruoka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the patent claim 1, 15 or 29 ('843) by including a signal processing apparatus and a working buffer in order to process images under different exposure condition and perform gradation correction on the luminance signals. The modifications thus improve image quality.

Claim 12 of the present application is encompassed by patent claim 2 or 16.

Claim 13 of the present application is encompassed by patent claim 3 or 15.

Claim 14 of the present application is encompassed by patent claim 4 or 15.

Claim 15 of the present application is encompassed by patent claim 1, 15 or 29.

Claim 19 of the present application is encompassed by patent claims 11 or 19.

Claim 20 of the present application is encompassed by patent claims 1, 15 or 29.

Claim Rejections. 35 USC § 112

- 4.** The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one "or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As stated in claim 18 on page 42, line 3, applicant claims a "digital camera...modifying a color mapping function of the two images to cover a relatively larger range for a high contrast scene". How much larger is "relatively larger"? The fact is that claim language, including terms of degree may not be precise. The term "relatively" is held as indefinite because there is a lack of a universal standard for measuring the degree intended for relatively larger to one of ordinary skill in the art.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

It is noted that the USPTO considers the Applicant's "one of" language to be anticipated by any reference containing one of the subsequent corresponding elements.

7. Claims 1, 6-11, 24, 27 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuashi (US-2003/0,133,019).

With regarding **claim 1**, Higuashi discloses a digital camera comprising:

an image sensor to capture a first image and a subsequent second image of a same scene (abstract; [0022]);

a storage device to store the captured images (Fig. 1; memory card 32); and

a processing unit coupled to the storage device to enhance one of the first and second captured images with luminance correction (image processor 34; [0052-0053]).

With regarding **claim 6**, Higuashi discloses a digital camera as recited in claim 1, wherein the storage device is external to the digital camera (Fig. 1; memory card 31).

With regarding **claim 7**, Higuashi discloses a digital camera as recited in claim 1, wherein the storage device comprises a plurality of storage devices (Fig. 1; memory card 31 and storage medium 9).

With regarding **claim 8**, Higuashi discloses a digital camera as recited in claim 1, wherein the digital camera is a device selected from a group comprising a digital camera, a digital video camera, and a digital camera capable of capturing video (Fig. 1; [0004; 0153]).

With regarding **claim 9**, Higuashi discloses a digital camera as recited in claim 1, wherein no artificial light is present while the first or second images are captured (see Fig. 1).

With regarding **claim 10**, Higuashi discloses a digital camera as recited in claim 1, wherein the image sensor remains exposed to light between the capturing of the first and second images (abstract; it inherent that image sensor remains exposed to light between the capturing of the first and second images in order to capture images).

With regarding **claim 11**, Higuashi discloses a digital camera digital camera as recited in claim 1, wherein the image sensor is exposed to light in response to a capture command (it is inherent that image sensor is exposed to light in response to a shutter release command).

With regarding **claim 24**, Higuashi discloses a digital camera as recited in claim 1, further comprising a plurality of image sensors (see Figs. 18-19).

With regarding **claim 27**, Higuashi discloses a method comprising:
exposing an image sensor to a scene (abstract);
capturing a first image of the scene (abstract; [0022]);

capturing a second image of the scene after capturing the first image (abstract; [0022]); and

applying luminance correction to the captured images ([0070-0071; 0087-0089]), wherein the image sensor remains exposed to light between the capturing of the first image and the capturing of the second image (image processor 34; [0052-0053]: image sensor inherently remains exposed to light in order to capture images).

With regarding **claim 33**, Higuashi discloses a method as recited in claim 27, wherein the luminance correction is applied by an external computing device (Fig. 1; image processor 34) communicatively coupled to the image sensor (camera 31; [0052-0053]).

8. Claims 1, 2, 12-13, 21, 25-28, 30-32, 34 and 36-39 rejected under 35 U.S.C. 102(e) as being anticipated by Tsuruoka (US-2007/0,206,246).

With regarding **claim 1**, Tsuruoka discloses a digital camera comprising:

an image sensor to capture a first image and a subsequent second image of a same scene ([0021; 0150-0152]);

a storage device to store the captured images (Figs. 1 and 15; working buffer 11); and

a processing unit coupled to the storage device to enhance one of the first and second captured images with luminance correction ([0070-0071; 0087-0089]).

With regarding **claim 2**, Tsuruoka discloses a digital camera as recited in claim 1, wherein the processing unit comprises one or more processors coupled to the storage device (Fig. 1 and 15; see control unit 16).

With regarding **claim 12**, Tsuruoka discloses digital camera as recited in claim 1, wherein the first and second images are taken in a dim lighting condition ([0050; 0139]: Tsuruoka teaches that diaphragm 2 and the electronic shutter of the CCD 4 are controlled such that an appropriate exposure is obtained in a photographing state).

With regarding **claim 13**, Tsuruoka discloses a digital camera as recited in claim 1, wherein the first image is underexposed (Fig. 1 and 15; see diaphragm 2 which is used for regulating exposure time; [0150-0152]).

With regarding **claim 21**, Tsuruoka discloses a digital camera as recited in claim 1, wherein an exposure bracketing feature of a digital camera is utilized to capture the first and second images ([0021; 0150-0152]).

With regarding **claim 25**, Tsuruoka discloses a digital camera as recited in claim 1, further comprising a plurality of buffers to store data (Fig. 1; buffer 6 and 11).

With regarding **claim 26**, Tsuruoka discloses a digital camera as recited in claim 1, further comprising a shutter that remains open during the capturing of the first and second images (Fig. 1; see diaphragm 2).

With regarding **claim 27**, Tsuruoka discloses a method comprising:
exposing an image sensor to a scene ([0021]);
capturing a first image of the scene ([0021]);
capturing a second image of the scene after capturing the first image ([0150-0152]); and
applying luminance correction to the captured images ([0070-0071; 0087-0089]),
wherein the image sensor remains exposed to light between the capturing of the first image and the capturing of the second image ([0021-0023]: image sensor inherently remains exposed to light in order to capture images).

With regarding **claim 28**, the claim contains the same limitation as claimed in claim 13. Therefore, claim 28 is analyzed and rejected as discussed under claim 13.

With regarding **claim 30**, Tsuruoka discloses a method as recited in claim 27, wherein the luminance correction is applied in accordance with luminance correction instructions stored on a storage device communicatively coupled to the image sensor ([0021-0023; 0131]).

With regarding **claim 31**, Tsuruoka discloses a method as recited in claim 27, wherein the luminance correction is applied in accordance with luminance correction instructions stored on a storage device communicatively coupled to the image sensor ([0021-0023; 0131]) and data corresponding to the captured images are buffered in one or more storage devices (Figs. 1 and 15; buffer 6 and 11).

With regarding **claim 32**, Tsuruoka discloses a method as recited in claim 27, wherein the luminance correction is applied by a processing unit communicatively coupled to the image sensor (Figs. 1 and 15; see control unit 16 and image sensor 4).

With regarding **claim 34**, Tsuruoka discloses a method as recited in claim 27, wherein the image sensor (CCD 4) is implemented in a digital camera (Fig. 1; abstract).

With regarding **claim 36**, Tsuruoka discloses an apparatus comprising:

- means for capturing a first image of a scene (see image sensor 4 in Fig. 1 and 15; [0021]);
- means for capturing a second image of the scene after capturing the first image ([0150-0152]); and
- means for applying luminance correction to the captured images ([0070-0071; 0087-0089]).

With regarding **claim 37**, Tsuruoka discloses apparatus as recited in claim 36, further comprising means for exposing an image sensor to the scene (Fig. 1 and 15; image sensor 4 inherently exposes to a captured scene).

With regarding **claim 38**, Tsuruoka discloses an apparatus as recited in claim 36, further comprising means for storing the captured images (Figs. 1 and 15; see image buffer 6 and working buffer 11).

With regarding **claim 39**, Tsuruoka discloses an apparatus as recited in claim 36, further comprising means for exposing an image sensor to light while the first and second images are captured (Figs. 1 and 15; [0021-0023; 0150-0153]: image sensor 4 inherently exposes to light in order to capture a plurality of images).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 16-17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka.

With regarding **claim 16**, Tsuruoka discloses a digital camera as recited in claim 1, wherein the image sensor is selected from a group comprising a CCD (Fig. 1 and 15; CCD 4). However, Higuashi fails to explicitly disclose the image sensor is selected from a group comprising a CMOS.

Official Notice is taken that it is well known and expected in the art to select a CMOS device for an image sensor in order to reduce size and cost. Therefore, it would have been obvious to one of ordinary skill in the art to modify the device of Tsuruoka select a CMOS image sensor. The modifications thus reduce size and cost of a camera.

With regarding **claim 17**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the digital camera is integrated into a device selected from a group comprising a cell phone, a watch, and a PDA.

Official Notice is taken that it is well known and expected in the art to integrating a digital camera into other mobile devices selected from a group comprising a cell phone, a watch, and a PDA in order to provide multiple functional for a single device. Therefore, it would have been obvious to one of ordinary skill in the art to modify the device of Tsuruoka by integrating a digital camera into other mobile devices. The modifications thus improve the versatile of a camera.

With regarding **claim 22**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the scene is selected from a group comprising a high movement scene, a biological matter scene, a dimly scene, and a high action scene.

Official Notice is taken that it is well known and expected in the art for a camera to be configured for capturing a high movement scene, a biological matter scene, a dimly scene, and a high action scene. Therefore, it would have been obvious to one of ordinary skill in the art to modify the device of Tsuruoka by capturing scene that is selected from a group comprising a high movement, a biological matter, a dimly, and a high action scene. The modifications thus improve the versatile of a camera.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of DeSimone (US-6,885,492).

With regarding **claim 23**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the digital camera is attached to a device selected from a group comprising a microscope and an electronic microscope.

DeSimone teaches an apparatus having a camera attaching to a microscope wherein DMV pattern image fills part or all the field of view of the camera (abstract; Col. 3, Ln. 54-67; Col. 14, Ln. 5-10). DeSimone teaches further teaches that the apparatus is useful and easy to coupled to an existing microscopes (Col. 2, Ln. 38-44). In light of the teaching from DeSimone, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka with the apparatus taught by DeSimone. The modifications require little or no modification of user's existing microscope (DeSimone: Col. 2, Ln. 38-44).

12. Claims 14, 18 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of Hamilton (US-6,075,889).

With regarding **claim 14**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the second image is blurred.

Hamilton teaches a digital image from the image buffer (18) is applied to a blur block in order to remove high frequency components from the digital image (Col. 5, Ln. 1-7). In light of the teaching from Hamilton, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka applied a blur block into the digital image in order to remove high frequency components from the digital image (Hamilton: Col. 5, Ln. 1-7).

With regarding **claim 18**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the luminance correction comprises modifying a color mapping function of the first and second images to cover a relatively larger range for a high contrast scene.

Hamilton teaches means for modifying a color mapping function of the two images to cover a larger range for a high contrast scene (Col. 4, Ln. 57-Col. 5, Ln. 15: see Figs. 3(a) and 3(b); "Finally an RGB values block 36 computes the image in Red(R), Green (G), Blue (B)). In light of the teaching from Hamilton, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the device of Tsuruoka to cover a larger range for a high contrast scene. The modifications thus improve the image quality.

With regarding **claim 29**, the claim contains the same limitations as claimed in claim 14. Therefore, claim 29 is analyzed and rejected as discussed under claim 14.

13. Claims 15 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of Chen (US-6,556,704).

Regarding **claim 15**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the luminance correction comprises: determining a spatial coherence and color statistics of the first and second images; and utilizing the determined color statistics and spatial coherence to enhance an underexposed one of the first and second images.

Chen teaches a camera wherein the luminance correction comprises: determining a spatial coherence and color statistics of the two images (Col. 3, Ln. 3); and utilizing the determined color statistics and spatial coherence to enhance one of the two images Col. 3, Ln. 34-Col. 4 Ln. 5). In light of the teaching from Chen, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka as taught by Chen. The modifications thus form pairs of intensity parameters indicative of potential correspondence between features in the two intensity images (Chen: Col. 3, Ln. 34-60).

With regarding **claim 35**, the claim contains the same limitations as claimed in claim 15. Therefore, claim 35 is analyzed and rejected as discussed under claim 35.

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of Kang (US-6,879,731).

Regarding **claim 19**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the luminance correction comprises utilizing color histogram equalization to determine color statistics corresponding to the first and second images, wherein the color histogram equalization comprises: transferring the first and second images to a perception-based color space; clustering color distributions in the perception-based space; performing histogram equalization in the perception-based space; and transferring a result of the histogram equalization to a red-green-blue space.

Kang teaches a method for transferring the two images to a perception-based color space ("FIG. 4 is a combined intensity histogram of the two images shown in FIG. 3 in radiance space. The left hand side of the plot corresponds to the long exposure frame, while the right hand side of the plot corresponds to the short exposure frame."); clustering color distributions in the perception-based space (The HDR video generation system and process can also involve tone-mapping of the radiance map to convert it into an 8-bit representation of the HDR frame that is suitable for rendering and display."

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at column 10, line 66); performing histogram equalization in the perception-based space (Referring to FIGS. 5A-B, the first step in calculating exposure settings to be used in capturing subsequent frames is to compute an intensity histogram for each of a pair of immediately preceding, already captured frames (process action 500)." at column 18, line 38); and transferring a result of the histogram equalization to a red-green-blue space ("The CIE space image is then converted to produce the final 8-bit range RGB image." at column 11, line 6). In light of the teaching from Kang, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka as taught by Kang. The modifications thus rapidly varying the exposure using a conventional video camera and allow the use of inexpensive and high resolution camera sensor available today (Kang: Col. 1, Ln. 60-67).

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuashi.

With regarding **claim 5**, Higuashi discloses a digital camera as recited in claim 1, wherein the digital camera (Fig. 1; camera 31) is coupled to an external computing device to perform one or more acts (image processor 34). However, Higuashi fails to explicitly disclose an external computing device controlling the digital camera, accessing data stored on the storage device, and receiving data from the image sensor.

Official Notice is taken that it is well known and expected in the art for an external computer to control, access a digital camera and receive data an image sensor of the

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digital camera. Therefore, it would have been obvious to one of ordinary skill in the art to modify the device of Higuashi to control and access a digital camera from an external computer. The modifications thus reduce camera's band-width and power.

16. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruoka in view of Hayashi (US-2005/0,225,650).

With regarding **claim 3**, Higuashi discloses a digital camera as recited in claim 1, wherein the processing unit comprises at least one processor (control unit 16) coupled to the storage device (buffer 11). Tsuruoka teaches software instructions that are executed for luminance correction ([0022-0023]). However, Tsuruoka fails to disclose a storage device (buffer 11) stores instructions executed by the at least one processor which enhance one of the first and second captured images with luminance correction.

Hayashi teaches a CPU that read in a program from a flash memory and executes this program using a buffer memory as working memory ([0043]). In light of the teaching from Hayashi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka to read in a program instruction and execute this program from a buffer memory. The modifications improve the camera speed.

With regarding **claim 4**, Tsuruoka fails to disclose a digital camera as recited in claim 1, wherein the processing unit is implemented as an application-specific integrated circuit (ASIC) or a programmable logic array (PLA).

Hayashi teaches a camera having an ASIC for image processing ([0036]). In light of the teaching from Hayashi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Tsuruoka to process images by an ASIC. The modifications thus improve the camera processing speed.

Allowable Subject Matter

17. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 20 the following is a statement of reason for the indication of allowance: the prior art made of record and considered pertinent to the applicant's disclosure does not disclose nor fairly suggest a digital camera of claim 1 further in combination with:

wherein the luminance correction comprises utilizing spatial region matching to determine a spatial coherence corresponding to the first and second images, wherein the spatial region matching comprises:

segmenting a blurred one of the first and second images into a plurality of similarly colored regions;

eroding each of the regions;
determining a number of iterations to completely erode each region;
determining a region center for each of the regions;
sorting the iteration numbers in descending order;
selecting pixel pairs from the first and second images in matching positions; and
calculating a neighborhood value for each selected pixel.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Ohta (US-5,101,276) discloses an imager for photographing a plurality of images with different exposure times that are accomplished at overlapped or continuous timings by controlling sweeping and reading operation of two fields independently.

b) Ueda (US-2004/0,017,487) discloses an imager having brightness control section.

c) Tamaru (US-2007/0,070,223) discloses a camera calculating luminance level and photographing plural images with different exposures.

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19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG H. LAM whose telephone number is (571)272-7367. The examiner can normally be reached on Monday - Friday 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LIN YE can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HL
03/29/08

/Nhan T. Tran/
Primary Examiner, Art Unit 2622